

with reference to specific embodiments, the description is illustrative of the invention and is not to be construed as limiting the invention. For example, the transducer can be mounted directly to the support rod without the use of damping material. Various modifications and applications may occur to those skilled in the art without departing from the true spirit and scope of the invention as defined by the appended claims.

What is claimed is:

Sub A2/

10. 1. Apparatus for use in cannulation of blood vessels comprising
  - a hollow needle having a sharpened end for penetrating tissue,
  - 15 a stylet positioned within said needle and including an ultrasound transducer at one end for transmitting and receiving ultrasonic waves through the sharpened end of said needle,
  - 20 a support rod for supporting said transducer,
  - means attaching said transducer to said support rod, coaxial electrical conductors associated with said support rod for transmitting electrical signals to and from said transducer, including a wire extending through said support rod electrically connected with a back surface of said transducer, and a metal conductor on the surface of said rod electrically interconnected with a front surface of said transducer, said metal conductor and support rod being spaced from said needle to facilitate back flow of blood when a blood vessel is penetrated, and
  - 30 a syringe portion detachably attached to said needle.
2. Apparatus as defined by claim 1 wherein said transducer includes metal contacts on said front and back surfaces of said transducer.

Sub B2/

3. Apparatus as defined by claim 1 wherein said means attaching said transducer to said rod includes an ultrasound damping material.
4. For use in apparatus for cannulation of blood vessels, a stylet for positioning within a hollow needle and comprising a support rod, an ultrasound transducer at one end of said support rod for transmitting and receiving ultrasonic waves, means attaching said transducer to said support rod, and coaxial electrical conductors associated with said support rod for transmitting electrical signals to and from said transducer including a wire extending through said support rod in contact with a back surface of said transducer, and a metal conductor on the surface of said rod in contact with a front surface of said transducer.
5. Apparatus as defined by claim 4 wherein said transducer includes metal contacts on said front surface and said back surface.
6. The apparatus as defined by claim 4 wherein said means attaching said transducer to said rod includes an ultrasound damping material.

a

Ans 83/

Add A3/

60

Add C1/

65